

# Signal Processing 101 & Soundscapes DOSITS Webinar Outline

## Signal processing 101 (Dr. Kathleen Wage)

Overview: Digital recording (sampling), analysis, and reconstruction

- Sampling: How fast should we sample signals to guarantee useful plots and accurate reconstruction?
- Filtering: How do we remove high frequencies from a signal while leaving the low frequencies alone?
- Analysis: How can we use a bank of filters to create a spectrogram?
- Wrap-up: Where to find more info about signal processing?

Outcomes:

After this webinar participants should be able to

- Define the components of an acoustic recording system and their purpose
- Select an appropriate A/D converter sample rate for the signals they wish to study
- View digital sound files in a freeware program
- Create a simple spectrogram

## DOSITS Links for Signal processing:

Science > How are sounds viewed and analyzed?

<https://dosits.org/science/measurement/how-are-sounds-viewed-and-analyzed/>

Science > What are common underwater sounds?

<https://dosits.org/science/sounds-in-the-sea/what-are-common-underwater-sounds/>

Science > Advanced Topics in Sound > Signal Processing

<https://dosits.org/science/advanced-topics/signal-processing/>

## Soundscapes (Dr. John Ryan)

- Apply signal processing (and machine learning) to distill the big data of the ocean soundscape into scientific understanding
- Aim scientific understanding toward informing resource management
- Make soundscape data openly accessible, together with an analysis toolbox

## DOSITS Links for Soundscapes:

Science > What are Soundscapes?

<https://dosits.org/science/sounds-in-the-sea/what-are-soundscapes/>

Hot Topics > Underwater Sound and Coral Reef Restoration

<https://dosits.org/underwater-sound-and-coral-reef-restoration/>

Science > Noise Field in the Arctic

<https://dosits.org/science/sounds-in-the-sea/noise-field-in-the-arctic/>